

THE DIPTERA OF THE TERRITORY OF NEW GUINEA. I.

FAMILY CULICIDAE.

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(One Text-figure.)

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The present paper contains part of the results of two expeditions to the Territory of New Guinea, when between three and four thousand specimens were either bred from larvae and pupae or collected in the field.

One species is described as new and notes are given on twenty-four others. Ten species are new to the Territory of New Guinea, while the distribution of seven others is considerably extended within the Territory.

When the entire collection is worked up many species, not previously recorded, will be added to the total of twenty-nine species and two varieties at present listed for the Territory.

The numerals preceding the names of some of the species refer to the catalogue number of the species in my recently published Check List of the Culicidae of the Australian Region. This has obviated the necessity of referring to important literature, only that of the author of each species being quoted.

Among interesting discoveries made to date are the description of a new species of *Bironella* subgenus *Brugella* (tribe Anophelini); *Anopheles longirostris* Brug, *Ficalbia* (*Etorleptomyia*) *elegans* Taylor, and *Culex* (*Culex*) *brevipalpis* Giles.

The type of the new species is in the collection of the School of Public Health and Tropical Medicine.

Unless otherwise stated the specimens have been taken by myself.

My personal thanks are due to the Administrator, General T. Griffiths, for granting transport facilities, to Dr. E. T. Brennan, Director, Public Health Department, for considerable assistance in many directions, and Drs. Clive Backhouse, E. A. Holland, H. Champion Hosking and Mr. S. V. Bayley, of the same Department for the gift of much material, also to Mr. G. H. Murray, Director of Agriculture, for his kindness in supplying the photograph of the *Pandanus* sp. (Text-fig. 1).

BIRONELLA (BRUGELLA) HOLLANDI, n. sp.

♂. Head clothed with thin narrow-curved black upright-forked scales except on the vertex, where they are silvery-white, and some silvery-white hairs overhang the eyes in the centre; palpi less than one-fourth the length of the proboscis, jet black; antennae not plumed, segments brownish-black, except the bases which are orange, more conspicuously so on the basal segments; proboscis black, labella brownish-black.

Thorax chocolate-brown, covered with numerous short brown hairs, the anterior third broadly pale yellow from the anterior margin to half-way to the wing-bases, from there to the wing-base the pale yellow is confined to the lateral margin; scutellum pale yellow except the middle third, which is pale brown with its posterior margin pale yellow, posterior bristles long, brown; bristles on thorax brown, well developed; pleurae chocolate-brown.

Wings: vein scales black, fringe dusky brown; fork-cells about equal in length, stem of the first slightly longer than its cell, that of the second about the length of its cell, base of the second fork-cell nearer the base of the wing than that of the first; the angle formed by the junction of the first and second veins quite shallow, base of the second vein about level with the base of the third fork-cell, base of the third vein slightly nearer the base of the wing than that of the second vein; stem of the second fork-cell with a comparatively sharp downward bend, about its middle, towards its base; anterior branch of the third fork-cell with a slight downward curve from about its centre to the cross-vein m-cu, cross-vein r-m longer than m-cu, parallel and about half its length from m-cu; basal half of the halteres pale, remainder black.

Legs: coxae and trochanters pale, femora, tibiae and tarsal segments dusky-brown except tarsals two to five of the hind legs, which are pale brown; ungues apparently all equal and simple.

Abdomen deep chocolate-brown, covered with moderately dense brown hairs, venter similar; coxite about twice as long as broad, tapering very slightly apically, with eight moderately long spines on raised tubercles close together at the base of the coxite, style with the basal third broader than in *B. travestitus*, curved inwards from about the base of the apical half, apical third about the same width throughout, spine apical, short, broad and blunt.

♀. Head: palpi, antennae and proboscis similar to the ♂; the silvery-white hairs on the vertex overhanging the eyes are more pronounced than in the ♂, and the silvery-white upright scales on the vertex extend on to the occiput.

Thorax chocolate-brown, narrowly pale brown laterally, more densely covered with brown hairs than in the ♂, the longer hairs arranged in rows, those along the acrostichal row of bristles being the most prominent; scutellum chocolate-brown. Wings as in the ♂.

Abdomen and legs as in the ♂.

Length, 3.5 mm.

Habitat.—Kavieng, New Ireland.

Bred from a mixed batch of larvae and pupae taken in a native village well, about three feet deep, situated on the east coast road about three miles from Kavieng.

Differs from *B. travestitus* Brug in having dark pleurae, the curvature of the stem of the second fork-cell less pronounced and that of the basal portion of the anterior branch of the third fork-cell more conspicuous; darker legs, and the coxite of the ♂ terminalia having eight spines at its base, instead of four as in *B. travestitus* Brug.

This is the first occurrence of the subgenus *Brugella* in the Territory of New Guinea, and it is possible that this species may be the same as *B. walchi* Soesilo, which was described from the larva only from Dutch New Guinea.

It affords me much pleasure to name this species after Dr. E. A. Holland, who has collected in New Ireland much valuable and interesting material for the

School of Public Health and Tropical Medicine. Grateful acknowledgement of the gift of various species of *Bironella* and of its subgenus *Brugella* is made to Col. S. L. Brug and Dr. R. Soesilo.

35. *ANOPHELES (MYZOMYIA) LONGIROSTRIS* Brug.

Geneesk. Tijd. Ned.-Ind., lxxviii, 1928, 278.

The proboscis with the basal half black, apical half deep yellow with a faint brown patch of scales beneath at the base of the labella; palpi with segments one and two black scaled, first segment with a narrow apical ring of white scales, second with a broad white apical band, third with a narrow basal black band, rest white scaled, apical with a narrow black basal band, the rest yellow.

Abdomen typical; halteres pale creamy, apical half more white than creamy. Wings typical.

Legs black scaled, the speckling of the femora, tibiae and first tarsals distinctly yellow and not creamy as in typical specimens.

Habitat.—Kavieng district, New Ireland.

A single specimen differs in the above details from typical specimens generously presented to the School by Col. S. L. Brug. It can, at most, be regarded as a colour variation, not deserving a varietal name in the absence of a series of specimens. New to the Territory of New Guinea.

39. *ANOPHELES (MYZOMYIA) PUNCTULATUS* Donitz.

Insekten-Borse, xviii, 1901, 372.

This species is found, though not commonly in the writer's experience, on low-lying ground, preferring localities of a few hundred feet altitude to mountainous country. It is common in the Wau (3,500 feet), Bulolo (2,200 feet) and Upper Watut districts. The latter has about the same altitude as Bulolo. Wau is about 35 miles from Salamaua, Upper Watut approximately 20 miles from Bulolo, the latter about 50 miles from Salamaua, the port of entry for the Morobe goldfield district.

This species is probably widely distributed in more or less elevated localities in the Territory of New Guinea. It occurs sparingly in the Rabaul District, and is abundant at Toma (1,000 feet *circa*), New Britain.

Var. *MOLUCCENSIS* Swellengrebel and Sw. de Graaf.

Bull. Ent. Res., xi, 1920, 78.

To a great extent this variety supplants the typical form in coastal localities. I have not found either larvae or adults in mountainous country in the Territory of New Guinea, and I doubt very much if it occurs in such localities.

This variety has been taken by the writer at Keravat, Kokopo and throughout the district between the outskirts of Rabaul and Keravat on the north coast road, and Kokopo in New Britain. It has also been found by the writer in New Ireland in various localities on the east coast road, breeding in the wells of native villages, in open swamps, backwaters of rivers and creeks. It was also found in the Namatanai district, New Ireland, breeding in similar situations to the above.

It was particularly abundant at Pondo, on the North Coast of New Britain, about 120 miles from Rabaul, when the writer was there in November, 1933.

44. *MEGARHINUS INORNATUS* Walker.

Proc. Linn. Soc., viii, 1865, 102.

Breeding in an old stump of a sago palm, Kavieng, New Ireland.

49. *TRIPTEROIDES (RACHISOURA) FILIPES* Walker.

Proc. Linn. Soc., v, 1861, 229.

The larvae breed in rot holes in trees.

Habitat.—Rabaul, New Britain.

62. *TRIPTEROIDES (TRIPTEROIDES) BIMACULIPES* Theobald.

Ann. Mus. Nat. Hung., iii, 1905, 114.

Originally described from the Madang District of New Guinea, this species has been bred in some numbers from larvae found in the cut ends of bamboos.

Habitat.—Rabaul, New Britain (S. V. Bayley; F. H. Taylor).

68. *TRIPTEROIDES (TRIPTEROIDES) QUASIORNATA* Taylor.

Proc. Linn. Soc. N. S. Wales, xl, 1915, 177.

A comparatively common species the larvae of which have been frequently taken by the writer in the water held by the axils of banana leaves and of *Colocasia* spp.; also found in rot holes of trees.

Habitat.—Rabaul, New Britain; Bulolo, New Guinea; Kavieng, New Ireland.

69. *HODGESIA CAIRNSENSIS* Taylor.

Proc. Linn. Soc. N. S. Wales, xliii, 1918 (1919), 842.

Habitat.—Kavieng, New Ireland.

74. *URANOTAENIA ARGYROTARSIS* Leicester.

Cul. Malaya, 1908, 214.

Larvae breed in small collections of casual ground water, not fully exposed to sunlight.

Recorded definitely for the first time from the Territory of New Guinea, though Hill (*Proc. Roy. Soc. Victoria*, xxxvii (n.s.), 1925, 67) doubtfully recorded it from Rabaul, New Britain and Kavieng, New Ireland.

My thanks are due to Dr. F. W. Edwards for the determination of this species.

Habitat.—Pondo (F. H. Taylor), Rabaul (G. F. Hill, F. H. Taylor), New Britain; Kavieng, New Ireland (G. F. Hill).

75. *URANOTAENIA ATRA* Theobald.

Ann. Mus. Nat. Hung., iii, 1905, 114.

Originally described from Muina, New Guinea, it now extends from Queensland through the Territory of New Guinea to India.

Habitat.—Alenaua Is., New Ireland (Lincoln Bell). Muina or Muima is a native village near Madang, New Guinea.

77. *URANOTAENIA NIGERRIMA* Taylor.

Trans. Ent. Soc. London, 1914, 203.

Larvae of this species were found in water held by a large leaf of a forest tree.

Habitat.—Salamaua, Bulolo, New Guinea. Previously known only from Papua.

81. *URANOTAENIA QUADRIMACULATA* Edwards.

Bull. Ent. Res., xx, 1929, 313.

The larvae of this species are commonly found in water held by fallen banana leaves.

Habitat.—Rabaul, New Britain; Bulolo, Salamaua, New Guinea. Not previously recorded from New Guinea.

89. *FICALBIA* (*ETORLEPTIOMYIA*) *ELEGANS* Taylor.

Trans. Ent. Soc. London, 1913, 703 [1914 (*Dixomyia*)].

A ♂ bred from a pupa, found in a small hole in the ground, agrees perfectly with the type from Townsville, Queensland.

This is the first recorded species from the Territory of New Guinea of a species of *Ficalbia*.

Habitat.—Rabaul, New Britain.

90. *MANSONIA* (*COQUILLETIDIA*) *CRASSIPES* v. d. Wulp.

Bijd. Fauna Midden Sumatra, Dipt., 9, 1892.

Habitat.—Upper Ramu, New Guinea (Dr. G. A. M. Heydon). Not previously recorded from the Territory of New Guinea.

101. *AÈDES* (*MUCIDUS*) *AURANTIUS* Theobald var. *NIGRESCENS* Edwards.

Bull. Ent. Res., xx, 1929, 314.

Bred from larvae found in a shady pool in a sago palm swamp. Not previously recorded from the Territory of New Guinea.

Habitat.—Kavieng, New Ireland (Dr. E. A. Holland).

136. *AÈDES* (*FINLAYA*) *KOCHI* Donitz.

Insekten-Borse, v, 1901, 38.

Hill (*Proc. Roy. Soc. Victoria*, xxxvii (n.s.), 1925, 72) states that the larvae of this species were taken in half coconut shells on many occasions. The writer has bred many thousands of mosquitoes from larvae found in half coconut shells in various parts of the Territory of New Guinea and has so far never bred any species of *Finlaya* from such a breeding place.

It is exceptional, in my experience in the Territory of New Guinea, to find larvae of species other than *Armigeres lacuum* Edwards, *Tripteroides* (*Rachisoura*) *filipes* Walker, *Aedes* (*Stegomyia*) *scutellaris* Walker, breeding in such a situation.

Finlaya spp. breed in rot holes in trees, the leaf axils of trees and of taro (*Colocasia* spp.). The larvae of both *Finlaya kochi* Donitz, and *F. wallacei* Edwards breed almost exclusively in the leaf axils of *Pandanus* spp., the former being found also in the leaf axils of the various species of taro (*Colocasia* spp.).

Habitat.—Kavieng, New Ireland (Miss P. Holland, biting indoors at night); Bulwa, New Guinea (larvae in axils of *Colocasia* sp.).

140. *AÈDES* (*FINLAYA*) *NOTOSCRIPATUS* Skuse.

Proc. Linn. Soc. N.S.W., xiii, 1888 (1889), 1738 (*Culex*).

♂. Abdomen with a small median basal spot of white scales on tergites four and five and the apical segment entirely white-scaled, and with basal white lateral spots except on the first tergite. ♀ with tergites entirely black, the lateral basal spots on segments three to seven.

Thorax of ♀ with the white lyre-shaped stripe and the median white line only; in the ♂ there are two very narrow short white stripes, one on either side of the median line, and about half the length of these lines in the typical form in which they are golden.

The coxite and style appear to be essentially the same as in the typical form from Sydney.

Habitat.—Rabaul, New Britain.

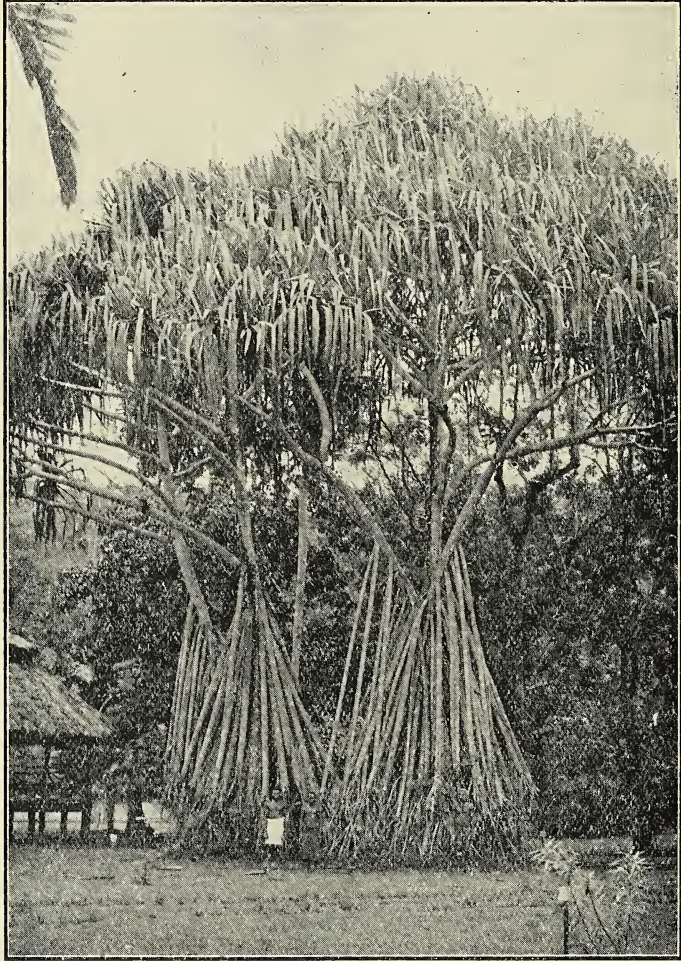
Until further material comes to hand I refrain from giving the above a varietal name.

150. *AËDES* (FINLAYA) *WALLACEI* Edwards.

Bull. Ent. Res., xvii, 1926, 105.

This species was common in Kavieng, New Ireland, January to February, 1934; enters houses to bite and is a troublesome species at night time, the bite being painful. It appears to breed exclusively in the axils of the leaves of the various species of *Pandanus*.

Habitat.—Kavieng, New Ireland (Dr. E. A. and Miss P. Holland).



Text-fig. 1.—*Pandanus* sp.

Finlaya kochi and *Finlaya wallacei* breed in water held in the axils of the leaves of *Pandanus*.

151. *AËDES* (MACLEAYA) *TREMULA* Theobald.

Entomologist, xxxvi, 1903, 154.

Habitat.—Rabaul, New Britain (S. V. Bayley, F. H. Taylor). Several specimens, one of which was identified by Dr. F. W. Edwards. Not previously recorded from the Territory of New Guinea.

166. *AÈDES* (*GEOSKUSIA*) *FIMBRIPES* Edwards.*Bull. Ent. Res.*, xiv, 1924, 390.

A long series of both sexes of this species was taken from crab-holes on the foreshores of Rabaul Harbour. Their association with crab-holes is somewhat of a mystery, for in no case was water found in numbers of the crab-holes which were dug up after capturing the adults. The sand at the bottom of the holes was perfectly dry in every case investigated. Both sexes were always taken at the same time in these holes. Adults were bred from larvae found in ground water pools by the writer.

171. *AÈDES* (*STEGOMYIA*) *ALBOLINEATUS* Theobald.*Entomologist*, xxxvii, 1904, 77.

This species seems to breed exclusively in rot holes in trees.

Habitat.—Rabaul, New Britain (Dr. Backhouse, S. V. Bayley); Kavieng, New Ireland (Dr. E. A. Holland).

174. *AÈDES* (*STEGOMYIA*) *SCUTELLARIS* Walker.*Proc. Linn. Soc.*, iii, 1859, 77.

This species seems to breed almost exclusively in half coconut shells and rot holes in trees containing water. It is, however, becoming a "domestic" species as the larvae were frequently found in tin water-containers in the native village, and in two house tanks belonging to a house in the course of construction at Salamaua, also in beached canoes near habitations.

Habitat.—Wau (3,500 ft. alt.), Bulolo (2,200 ft.), Bulwa, Salamaua, New Guinea; and throughout the Territory of New Guinea, especially where there are coconut plantations.

Var. *A*.—Two female specimens, bred from larvae, show a marked variation in the abdominal markings, although constant in other respects. Tergites one to four with lateral spots only, median on one to three, submedian on four, small on one and two, easily in dorsal view on three and four, tergites five to seven with submedian white banding, less prominent on the fifth, sternites one and two with a broad white line of scales, sloping from the lateral spots to the centre at base of sternites, rest black-scaled, third sternite with a broad median white band, prolonged in the centre to base of sternite, fourth sternite similar but the median basal prolongation broader and with a black narrow line of scales about half its depth in its centre, the broad part of the wedge posterior, fifth sternite similar to that of the fourth but the black line in the centre about three times as wide, sixth sternite with the basal half all white except a small lateral patch basally which is black, seventh sternite black with a small lateral white patch.

Habitat.—Rabaul, New Britain.

In the absence of males I do not consider it wise to give these specimens varietal names. It is unfortunate that these specimens were not bred singly so that their larval and pupal skins could have been preserved.

Var. *B*.—A ♂ which has typical terminalia shows abdominal tergites one to four inclusive unbanded with median lateral spots increasing in size, that of the fourth appearing as a dorsal band with the middle two-thirds missing, tergites five and six with submedian white bands, seventh with median lateral spots, eighth entirely pure white, sternites one to six normal, seventh and eighth black.

Habitat.—Rabaul, New Britain.

182. AÊDES (AÊDES) FUNEREUS Theobald var. ORNATUS Theobald.

Ann. Mus. Nat. Hung., iii, 1905, 79.

Through a printer's error, Hill (*Proc. Roy. Soc., Victoria*, xxxvii (n.s.), 1925, 73) records the varietal name as "*rnatus*".

This variety seems to be confined to coastal regions. I did not find it at Wau, Bulolo or Bulwa in New Guinea. The larvae seem to be confined to partly shaded ground water.

CULEX BREVIPALPIS Giles.

Handb. Gnats, 2nd Ed., 1902, 384 (*Stegomyia*); Barraud, *Ind. Jnl. Med. Res.*, xi, 1924, 1277; *op. cit.*, xii, 1924, 432; Brug, *Bull. Ent. Res.*, xiv, 1924, 440.

Habitat.—Rabaul, New Britain; Alenaua Is., New Ireland (L. Bell).

Previously known from India, Malay States and East Borneo. Recorded for the first time from the Australian Region. I am indebted to Dr. F. W. Edwards for the determination.

212. CULEX (CULEX) MIMULUS Edwards.

Bull. Ent. Res., v, 1915, 284.

Taken in considerable numbers. Recorded for the first time from New Guinea.

Habitat.—Wau, Bulolo, New Guinea.
